

ABSTRACT

A device and method which comprises a sensing surface on a membrane, solid surface or electrode, where the sensing surface contains a dye or chromophore chosen in relation to a particular target substance to be detected and quantified. The dye or chromophore is of a type which produces an electrical signal upon illumination. The particular dye or chromophore chosen for a particular target substance is one in which the presence of the target substance causes a change in the electrical signal produced. The presence of the target substance modifies the expected photo-induced charge movements (PICM) produced by the sensing surface upon illumination. The photo-induced charge movements produce signals which are detected by electronic circuits, and the presence and concentration of the target substance is determined by analyzing the difference between the PICM of the target sample versus the PICM of a control sample lacking the target substance.